Remarks

With this response, applicant has amended claims 51, 54, 55, 69, 70, and 74-76, and has canceled claims 52-53 and 56-68. Consideration and allowance of presently pending claims 51, 54, 55, 69, 70, and 74-76 is respectfully requested.

I. Recapitulation of the Invention[1]

The present invention is directed to an ejector pin for a mold, such as a plastics injection mold. The claimed ejector pin has a head that is attached to one end of an elongate barrel. The head is received in an ejector plate assembly of a mold that is driven during mold operation to reciprocate the ejector pin so it can bear against some portion of the part being molded to facilitate its removal from a cavity of the mold where the part was formed.

In one preferred embodiment, the end of the barrel that is attached to the head has a locator surface, such as a straight portion or a flat, that mates with a corresponding locator surface that is part of a recessed land in the head in which the barrel end is received. When the two locator surfaces mate with each other, relative rotation between the head and the barrel is opposed. This helps prevents them from inadvertent disassembly during mold operation.

The head has a pair of end walls with the recessed land formed in one of the end walls and defined by an upraised sidewall that extend outwardly from a bottom wall of the recessed land. The sidewall follows the contour of the periphery of the end of the barrel and has a locator surface that is complementary with the locator surface of the barrel. Such a locator surface preferably is a straight portion of the recessed land sidewall that mates with a straight portion of the sidewall of the barrel that is located adjacent the barrel end.

The head also includes a bore through which a fastener extends to attach the head to the barrel. Part of the fastener extends through the bore and engages the barrel to attach the head to the barrel.

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[1] This Section is intended to provide the Examiner with some background information on the state of the art and applicant's contribution to it. It is *not* intended to distinguish specific claims from the prior art. That task is performed in Section II below.

In another preferred embodiment, the head has a pair of arms spaced apart to define a threaded channel therebetween with the arms clamped around an exteriorly threaded portion of the barrel. In a still further preferred embodiment, the head has a recessed land in which a threaded bore is disposed that threadably receives a threaded portion of the barrel. An annular ring having a radially inward projection and a plurality of radially outwardly extending projections engages the barrel and the head to prevent relative rotation therebetween.

The claimed arrangements advantageously enable the barrel to be custom cut to the desired length for the mold in which the ejector pin is to be used. Thereafter, the barrel is assembled to the head in an aforementioned manner that ensures that the head will not come off of the barrel during mold operation.

II. Rejections Under 35 U.S.C. §103(a)

1. Claims 51-64 and 74-76

In the Office Action, the Examiner has rejected claims 51-64 and 74-76 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,788,872 to Uratani, in view of U.S. Patent No. 4,684,101 to Wagner et al.

a. Independent Claim 51

As amended, claim 51 is believed to be presented in condition for allowance. None of the cited references of record disclose, teach or suggest an ejector pin, much less an ejector pin of the claimed construction. As noted in the attached definition of the term "ejector pin" from http://composite.about.com/library/glossary/e/bldef-e1883.htm, an "ejector pin" is a "rod, pin or sleeve which pushes a molding off or forces it out of a cavity." In contrast, a mold marking insert is used to imprint some sort of an indicia into the molding. While an ejector pin can include a mold marking insert, a mold marking insert is *not* an ejector pin.

Uratani, the primary reference of record, discloses a removable marking insert for a mold, *not an ejector pin*. This reference, therefore, fails to disclose, teach or suggest any kind of an ejector pin, much less any arrangement remotely close to the claimed ejector pin. ***In fact, Uratani lacks any mention of the term "ejector," let alone "ejector pin."***

The Wagner reference is likewise deficient as it too fails to disclose, teach or suggest any kind of an ejector pin. The Wagner reference also is directed to a mold marking insert and not an ejector pin. ***The Wagner reference also lacks any mention of the term "ejector," let alone "ejector pin."***

The same is also true for Kuhling, U.S. Patent No. 4,708,314 and Schroder, DE 197 01 025 C2. Both of these references disclose some sort of a mold marking insert and neither one of these references disclose any kind of an ejector pin. For example, while the Schroder reference is in German, not a single one of its drawing figures discloses any kind of an ejector pin! The same is true for Kuhling. ***Indeed, there also is not one mention of the terms "ejector" or "ejector pin" in Kuhling.***

For whatever reason, it appears that the Office Action improperly applies the prior art previously cited in the parent (U.S. Patent No. 6,308,929) to the claims of the above-identified application. While the claims of the parent '929 patent are indeed directed to a mold insert, the present claims are not. The present claims are all directed to an ejector pin.

The characterization of the Uratani reference in the Office Action is incorrect. The Office Action refers to the part labeled by reference numeral 5 of Uratani as somehow being a "head" of an ejector pin. However, this component of Uratani is identified at col. 5, lines 7-9 as being a "cover member (6) [that] is inserted into the lower bore portion (33) and clings to the outer member (3)" of removable marking device (1). A "cover" simply is *not* a head of an ejector pin. Likewise, the "substantially cylindrical outer member (3)" of the removable marking device (1) is simply *not* the barrel of an ejector pin.

Claim 51 has been amended so it recites an ejector pin having a head that is received in an ejector plate assembly of a mold with the head being attached by a fastener to a barrel of the ejector pin such that the end of the barrel bears against the head. No such arrangement is disclosed, taught or otherwise suggested in either Uratani or Wagner, alone or in combination with each other or Kuhling or Schroder. To the extent that Uratani discloses any kind of a fastener, such as that of its indicator 4 disclosed in Uratani, it does not form part of an ejector pin and does not attach anything that even remotely resembles a head to anything that remotely resembles a barrel. While Wagner discloses an insert in Fig. 1 that uses a fastener 34 to attach a

head portion 28 of an insert 20 to a retainer block 36, the insert 20 does not reciprocate during mold operation like an ejector pin does and its head portion 28 does not bear against the retainer block 36.

Claim 51 also has been amended so it recites that the ejector pin head is receivable in an ejector plate assembly of a mold. Such an ejector plate assembly is driven during mold operation to reciprocate the ejector pin back and forth to eject parts formed in the cavity of the mold. Uratani, Kuhling and Schroder disclose, teach or suggest nothing of the sort. The head portion 28 of the insert 20 disclosed in Wagner is not received in any kind reciprocable holder whatsoever, much less an ejector plate assembly.

Claim 51 also has been amended so it recites an ejector pin having one end of its barrel attached to the head and its other end disposed toward a cavity of the mold. The barrel has a width less than that of the head in its lengthwise direction such that the head is wider than the barrel. This configuration is nowhere disclosed, taught or suggested in Uratani, Wagner, Kuhling or Schroder.

Claim 51 also has been amended to recite that the head has a recessed land in which one end of the barrel is received with the land defined by a sidewall that has a curved portion and a straight portion and the barrel having a flat that bears against the straight portion of the land sidewall when the barrel is received in the land such that relative rotation between the head and the barrel is opposed. None of the references disclose, teach or suggest any similar structure where two engaged components each have straight portion or flat surface that bear against one another when they are engaged in a manner that prevents relative rotation between the two engaged components.

It is respectfully requested that the amendments to claim 51 be entered. It is believed that claim 51, as amended, raises no new issues nor requires additional searching as amended claim 51 recites limitations previously recited in dependent claims 64-67 (now canceled).

For at least these reasons, it is believed that independent claim 51 should be allowed and its allowance is respectfully requested.

b. Dependent Claims 54-55

Dependent claims 54 and 55 are each believed to be in condition for allowance as both ultimately depends from independent claim 51, a claim now believed to be presented in condition for allowance.

c. Independent Claim 74

As amended, claim 74 is believed to be presented in condition for allowance. Claim 74 has been amended to recite limitations formerly recited in dependent claims 56, 58 and 59.

As previously mentioned with regard to claim 51, none of the cited references of record disclose, teach or suggest an ejector pin, much less an ejector pin of the construction recited in claim 74. To that end, none of the cited references discloses, teaches or suggests an ejector pin that includes a cylindrical ejector pin barrel that is threadably received in a threaded bore in a head that has a lengthwise extent greater than the width of the barrel.

With regard to Uratani, while the Examiner acknowledges on page 3 of the Office Action that Uratani fails to disclose any kind of a locator projection on the ring that enters a groove in the barrel, the Office Action also fails to identify any component in Uratani that corresponds to the ring recited in claim 74. Not only does Uratani lack such a ring, it fails to disclose, teach or suggest any other corresponding structure (1) that encircles the barrel, (2) that is received in a recessed land formed in a head of an ejector pin, and (3) that is located between the head and the barrel, such as is required by claim 74.

It is respectfully requested that the amendments to claim 74 be entered. It is believed that claim 74, as amended, raises no new issues nor requires additional searching as amended claim 74 recites limitations previously recited in dependent claims 56, 58 and 59 (now canceled).

For at least these reasons, it is believed that independent claim 74 should be allowed and its allowance is respectfully requested.

d. Independent Claim 75

As amended, claim 75 is believed to be presented in condition for allowance. Claim 75 has been amended to recite limitations formerly recited in dependent claims 56 and 57.

As previously mentioned with regard to claim 51, none of the cited references of record disclose, teach or suggest a reciprocable ejector pin, much less an ejector pin of the construction recited in claim 75. To that end, none of the cited references discloses, teaches or suggests an ejector pin that includes a cylindrical ejector pin barrel that is clamped between a pair of arms of an ejector pin head whose arms define a threaded channel therebetween in which a threaded portion of the barrel is received.

Uratani fails to disclose, teach or suggest the claimed invention. Uratani fails to disclose, teach or suggest any structure that corresponds to a reciprocable ejector pin. Uratani also fails to disclose, teach or suggest an ejector pin barrel that has a threaded portion adjacent one end that is received between a pair of arms of an ejector pin head. From this, it logically follows that Uratani also fails to disclose, teach or suggest arms of an ejector pin head that clamp around an ejector pin barrel, attaching the head to the barrel.

Wagner also fails to disclose, teach or suggest the claimed invention. The structure characterized in the Office Action has being a "head" (136) and a "barrel" (130) does not correspond to the claimed ejector pin head and ejector pin barrel and does not function anything like an ejector pin, which is reciprocable. More specifically, the structure characterized in the office action as being a "head" (130) is a shank portion 130 that is used to keep the insert 126 in its pocket in the mold and that is removed when it is desired to change the insert 126. As such, the insert 126 disclosed in Wagner simply cannot function as a reciprocable ejector pin because it is always immovably held in place by the shank portion 130.

Claim 75 has been amended to require that the arms of the head are curved to define a channel between the arms that is internally threaded with one of the arms facing but spaced apart from the end of the other one of the arms. None of the cited references disclose, teach or suggest these claim limitations. To the extent that Wagner discloses arms 118, they are not curved and they do not have spaced apart ends that face each other.

Claim 75 has been amended to include a fastener that engages both arms of the head adjacent the end of each arm to clamp the arms around the threaded portion of the ejector pin barrel. None of the cited references disclose, teach or suggest these claim limitations. The

fastener 124 disclosed in Wagner does not engage both arms and is not located adjacent the end of each arm. As such, the arms 118 disclosed in Wagner cannot and do not function as a clamp.

It is respectfully requested that the amendments to claim 75 be entered. It is believed that claim 75, as amended, raises no new issues nor requires additional searching as amended claim 75 recites limitations previously recited in dependent claims 56 and 57 (now canceled).

For at least these reasons, it is believed that independent claim 75 should be allowed and its allowance is respectfully requested.

c. Independent Claim 76

As amended, claim 76 is believed to be presented in condition for allowance. Claim 76 has been amended to recite limitations formerly recited in dependent claims 64-67 (now canceled).

As previously mentioned with regard to claim 51, none of the cited references of record disclose, teach or suggest a reciprocable ejector pin, much less an ejector pin of the construction recited in claim 76. To that end, none of the cited references disclose, teach or suggest an ejector pin that includes a cylindrical ejector pin barrel that is attached to an ejector pin head by a fastener that has a threaded shank that extends through a bore in the head, engages the barrel, and is flush with the head. None of the cited references disclose, teach or suggests an ejector pin barrel having an end with a circular periphery that has a straight portion that bears against a straight portion of a sidewall that defines a recessed land in an ejector pin head to oppose relative rotation between the head and the barrel.

Uratani fails to disclose, teach or suggest the claimed invention. Uratani fails to disclose, teach or suggest any structure that corresponds to a reciprocable ejector pin. Uratani not only fails to disclose, teach or suggest an ejector pin barrel received in a recessed land of an ejector pin head, it also fails to disclose, teach or suggest relative rotation between these two components being opposed by a circular end of the barrel having a straight portion that bears against a straight portion of a sidewall that defines the recessed land formed in the head. Uratani also fails to disclose a fastener having a threaded shank extending in a direction parallel to the lengthwise direction of the ejector pin barrel that engages the barrel to attach the head to the barrel.

Kuhling also fails to disclose, teach or suggest the claimed invention. The structure of Kuhling characterized in the Office Action has being a "barrel" (19) is not a cylindrical barrel, much less a component of an ejector pin. Rather, reference numeral 19 is identified in Kuhling as being a "die wall 19." *See, e.g.*, col. 3, line 67. The die wall is a part of the mold that does not reciprocate during mold operation. Thus, it in no way corresponds to any part of an ejector pin.

The structure of Kuhling characterized in the Office Action as being a "head" (26) is not a head that is receivable in an ejector plate assembly and is therefore not a component of a reciprocable ejector pin. Rather, reference numeral 26 is identified in Kuhling as being a "spacing disk or shim 26." In addition, the "spacing disk or shim 26" does not have any recessed land formed in it that receives the "die wall 19," as is also required by claim 76.

The structure of Kuhling characterized in the Office Action as being a "flat" (31) does not bear against any part of the so-called head (26) of Kuhling to oppose relative rotation between the head and barrel, as is required by claim 76. In fact, the structure of Kuhling characterized in the Office Action as being a "flat" (31) is actually "a joint cavity 31 formed in die wall 19 and spacing disk 26." It is physically impossible for a cavity to bear against anything, much less oppose rotation between the die wall 19 and spacing disk 26, as is required by claim 76.

To the extent that the spacing member (30) disclosed in Kuhling could be construed as being a fastener, it does not attach the spacing disk 26 to the die wall 19. Rather, it only fixes the position of the spacing disk 26 and not the die wall 19 (which is already itself fixed and needs no position fixing) as Kuhling discloses that the "spacing disk 26 is finally fixed in position by a spacing member 30, which is positioned in a joint cavity 31 formed in die wall 19 and in the spacing disk 26."

Even if it is assumed in the alternative that Kuhling somehow does disclose some sort of a fastener, Kuhling does not disclose, teach or suggest a fastener having a threaded shank. Kuhling also does not disclose, teach or suggest a fastener that extends through a bore in an ejector pin head and that engages an ejector pin barrel. Kuhling also does not disclose, teach or suggest a fastener having a threaded shank that extends outwardly from a fastener

It is respectfully requested that the amendments to claim 76 be entered. It is believed that claim 76, as amended, raises no new issues nor requires additional searching as amended claim 76 recites limitations previously recited in dependent claims 64-67 (now canceled).

For at least these reasons, it is believed that independent claim 76 should be allowed and its allowance is respectfully requested.

2. Claims 69 and 70

In the Office Action, the Examiner has rejected claims 69 and 70 under 35 U.S.C. §103(a) as being unpatentable over Uratani, in view of Wagner et al., DE 19701025 A1 to Schroder, and Kuhling, U.S. Patent No. 4,708,314.

a. Independent Claim 69

As amended, claim 69 is believed to be presented in condition for allowance. None of the cited references of record disclose, teach or suggest an ejector pin, much less an ejector pin of the claimed construction.

As previously mentioned with regard to claim 51, none of the cited references of record disclose, teach or suggest a reciprocable ejector pin, much less an ejector pin of the construction recited in claim 69. To that end, none of the cited references disclose, teach or suggest an ejector pin that that has its barrel cut to length with the cut to length end being received in a recessed land formed in the head of the pin and the head attached to the barrel by a fastener. None of the cited references disclose, teach or suggest an ejector pin of this construction where the recessed land has a sidewall with a locator flat that mates with a locator flat formed in the outer sidewall of the barrel to prevent relative rotation between the head and the barrel.

Kuhling fails to disclose, teach or suggest the claimed invention for these further reasons. The structure of Kuhling characterized in the Office Action has being a "barrel" (19) is not a cylindrical barrel, much less a component of an ejector pin. Rather, reference numeral 19 is identified in Kuhling as being a "die wall 19." *See, e.g.*, col. 3, line 67. The die wall is a part of the mold that does not reciprocate during mold operation. Thus, it in no way corresponds to any part of an ejector pin.

The structure of Kuhling characterized in the Office Action as being a "head" (26) is not a head that is receivable in an ejector plate assembly and is therefore not a component of a reciprocable ejector pin. Rather, reference numeral 26 is identified in Kuhling as being a "spacing disk or shim 26." In addition, the "spacing disk or shim 26" does not have any recessed land formed in it that receives the "die wall 19," as also is required by claim 69.

The structure of Kuhling characterized in the Office Action as being a "flat" (31) does not mate with any part of the so-called head (26) of Kuhling to prevent relative rotation between the head and barrel, as is required by claim 69. In fact, the structure of Kuhling characterized in the Office Action as being a "flat" (31) is actually "a joint cavity 31 formed in die wall 19 and spacing disk 26." It is physically impossible for a cavity to bear against anything, much less oppose rotation between the die wall 19 and spacing disk 26, as is required by claim 69.

To the extent that the spacing member (30) disclosed in Kuhling could be construed as being a fastener, it does not *mount* the spacing disk 26 to the die wall 19. Rather, it only fixes the position of the spacing disk 26 and not the die wall 19 (which is already itself fixed and needs no position fixing) as Kuhling discloses that the "spacing disk 26 is finally fixed in position by a spacing member 30, which is positioned in a joint cavity 31 formed in die wall 19 and in the spacing disk 26."

Wagner also fails to disclose, teach or suggest the claimed invention. The structure of Wagner characterized in the Office Action as being "a pocket (132) formed by the barrel (130)" does not correspond to that which is recited in claim 69, which requires the recessed land be formed in the ejector pin head, not the barrel. Pocket (132) is actually disclosed in Wagner as being a "mortice 132 (i.e., aperture through the center of shank 130) ...," which is not a recessed land as required by claim 69. The recessed land recited in claim 69 does not extend all the way through the ejector pin head, which is unlike the mortise 132 disclosed in Wagner. As such, Wagner fails to disclose, teach or suggest the end of the ejector pin barrel being received in a recessed land in an ejector pin head.

The "piece (140)" of Wagner referred to in the Office Action fails to correspond to any limitation recited in claim 69. "Piece (140)" is disclosed in Kuhling as being "a single prong 140" that is wedged into mortise 132 not for the purpose of preventing rotation of any

component, but rather to immovably hold the insert 126 in the mold during mold operation. By doing this, the insert 126 simply cannot reciprocate during mold operation in the manner that an ejector pin must.

It is respectfully requested that the amendments to claim 69 be entered. It is believed that claim 69, as amended, raises no new issues nor requires additional searching as amended claim 69 recites limitations previously recited in dependent claims 64-67 (now canceled).

For at least these reasons, it is believed that independent claim 69 should be allowed and its allowance is respectfully requested.

b. Independent Claim 70

As amended, claim 70 is believed to be presented in condition for allowance. None of the cited references of record disclose, teach or suggest an ejector pin, much less an ejector pin of the claimed construction.

As previously mentioned with regard to claim 51, none of the cited references of record disclose, teach or suggest a reciprocable ejector pin, much less an ejector pin of the construction recited in claim 70. To that end, none of the cited references disclose, teach or suggest an ejector pin that has an ejector pin head with a lengthwise extent greater than the width of an ejector pin barrel to which it is attached by a fastener with the head having a recessed land with a locator surface that mates with a complementary locator surface in the outer sidewall of the barrel to oppose relative rotation between the head and the barrel.

Kuhling fails to disclose, teach or suggest the claimed invention for these further reasons. The structure of Kuhling characterized in the Office Action has being a "barrel" (19) is not a cylindrical barrel, much less a component of an ejector pin. Rather, reference numeral 19 is identified in Kuhling as being a "die wall 19." *See, e.g.*, col. 3, line 67. The die wall is a part of the mold that does not reciprocate during mold operation. Thus, it in no way corresponds to any part of an ejector pin.

The structure of Kuhling characterized in the Office Action as being a "head" (26) is not a head that is receivable in an ejector plate assembly and is therefore not a component of a reciprocable ejector pin. Rather, reference numeral 26 is identified in Kuhling as being a

"spacing disk or shim 26." In addition, the "spacing disk or shim 26" does not have any recessed land formed in it that receives the "die wall 19," as also is required by claim 70.

The structure of Kuhling characterized in the Office Action as being a "flat" (31) does not mate with any part of the so-called head (26) of Kuhling to prevent relative rotation between the head and barrel, as is required by claim 70. In fact, the structure of Kuhling characterized in the Office Action as being a "flat" (31) is actually "a joint cavity 31 formed in die wall 19 and spacing disk 26." It is physically impossible for a cavity to bear against anything, much less oppose rotation between the die wall 19 and spacing disk 26 as is required by claim 70.

To the extent that the spacing member (30) disclosed in Kuhling could be construed as being a fastener, it does not *attach* the spacing disk 26 to the die wall 19. Rather, it only fixes the position of the spacing disk 26 and not the die wall 19 (which is already itself fixed and needs no position fixing) as Kuhling discloses that the "spacing disk 26 is finally fixed in position by a spacing member 30, which is positioned in a joint cavity 31 formed in die wall 19 and in the spacing disk 26."

Wagner also fails to disclose, teach or suggest the claimed invention. The structure of Wagner characterized in the Office Action as being "a pocket (132) formed by the barrel (130)" does not correspond to that which is recited in claim 70, which requires the recessed land be formed in the ejector pin head, not the barrel. Pocket (132) is actually disclosed in Wagner as being a "mortice 132 (i.e., aperture through the center of shank 130) ...," which is not a recessed land as required by claim 70. The recessed land recited in claim 70 does not extend all the way through the ejector pin head, which is unlike the mortise 132 disclosed in Wagner. As such, Wagner fails to disclose, teach or suggest the end of the ejector pin barrel being received in a recessed land in an ejector pin head.

The "piece (140)" of Wagner referred to in the Office Action also fails to correspond to any limitation recited in claim 70. "Piece (140)" is disclosed in Kuhling as being "a single prong 140" that is wedged into mortise 132, not for the purpose of preventing rotation of any component, but rather to immovably hold the insert 126 in the mold during mold operation. By doing this, the insert 126 simply cannot reciprocate during mold operation in the manner that an ejector pin must.

It is respectfully requested that the amendments to claim 70 be entered. It is believed that claim 70, as amended, raises no new issues nor requires additional searching as amended claim 70 recites limitations previously recited in dependent claims 64-67 (now canceled).

For at least these reasons, it is believed that independent claim 70 should be allowed and its allowance is respectfully requested.

Conclusion

No fees are believed to be payable with this communication. However, the Commissioner is authorized to charge any fees or credit any overpayment to Deposit Account No. 50-1170.

Applicant believes the application is now in condition for allowance and such action is earnestly requested. If the Examiner believes that a telephone interview with applicant's attorney would facilitate the prosecution and allowance of the application, the Examiner is invited to contact the attorney at the telephone number listed below.

Respectfully submitted,

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Dated: MAY 19, 2004

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Definition: A rod, pin or sleeve which pushes a molding off or forces it out of a cavity. It is attached to an ejector bar or plate which can be actuated by the ejector rod(s) of the press or by auxiliary activated cylinders.

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